ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AMACC08014
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Corynorhinus townsendii pallescens*
COMMON NAME: Pale Townsend's Big-eared Bat; Lump-nosed Bat; Western Big-eared Bat; Long-eared Bat; Pale Lump-nosed Bat, Western Long-eared Bat; Western Lump-nosed Bat, Mule-eared Bat
SYNONYMS: *Plecotus townsendii pallescens; Corynorhinus rafinesquii pallescens; Corynorhinus macrotis pallescens*
FAMILY: Vespertilionidae

AUTHOR, PLACE OF PUBLICATION: *Corynorhinus townsendii pallescens* Frost, American Museum Novitates 3034:1-16, 1992. *Plecotus townsendii pallescens* Handley, Proc. U.S. Nat. Mus., 110:190, 1959. *Corynorhinus macrotis pallescens* Miller, N. Amer. Fauna, 13:52, October 16, 1897.

TYPE LOCALITY: *Corynorhinus macrotis pallescens,* Keam Canyon, Navajo County, Arizona.

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: This is 1 of 2 species in the genus *Corynorhinus* in North America, and the only species of the genus in Arizona. All Arizona populations are considered to be the subspecies *C. townsendii pallescens*, which is 1 of 5 subspecies in the species *townsendii*. According to NatureServe. "Formerly known as *Corynorhinus rafinesquii*. Returned to the Genus *Plecotus* by Handley (1959). Frost and Timm (1992) evaluated morphological and karyological characters from a phylogenetic perspective; they re-elevated the subgenus *Corynorhinus* to full genus status—the North American species *Plecotus mexicanus, Plecotus rafinesquii* and *Plecotus townsendii* were once again placed in the genus *Corynorhinus*, leaving the Old World species *Plecotus auritus, Plecotus austriacus* and *Plecotus teneriffae* as the only members of the genus *Plecotus*. A morphological phylogenetic analysis by Tumlison and Douglas (1992) also concluded that the North American species should be placed in the genus *Corynorhinus*. Bogdanowicz et al. (1998) examined the morphological and chromosomal variation and found that *Corynorhinus* is strongly supported as a distinct genus, with *Plecotus* limited to Palearctic species; also, they concluded that *Idionycteris phyllotis* and *Euderma maculatum* should be regarded as generically distinct."

DESCRIPTION: Medium-sized bat, wingspan 30-34 cm (12-13 in), forearm 3.9-4.7 cm (1.56-1.88 in.), weight 8-14 g (0.3-0.5 oz). Dorsal hairs are slate or gray with pale cinnamon brown to blackish brown tips that contrast little with the base. The ventral hairs are slate, gray

or brownish with brownish or buff tips. Large, hairless ears, 30.0-39.0 mm (1.2-1.56 in.) in length and are joined across the forehead. They have a large glandular lump on each side of the nose. The hairs on their toes do not project beyond the toenails.

AIDS TO IDENTIFICATION: *Corynorhinus townsendii* is distinguished from all but 4 species of Arizona bats by its large ears. Presence of a pair of glandular lumps on the nose distinguishes *C. townsendii* from the other 4 big-eared species: *Macrotus californicus, Euderma maculatum, Idionycteris phyllotis* and *Antrozous pallidus*. *C. townsendii* distinguished by its unicuspid first upper incisor from *P. mexicanus* (a Mexican species with a bicuspid first upper incisor whose range in northeastern Sonora extends to within a few miles of Arizona's southeastern border).

Additionally when compared with *P. mexicanus, C. townsendii* is distinguished by its dorsal hairs having bases much lighter than tips rather than bases and tips being almost the same color; crossribs in tail membrane usually >9.0 mm (0.36 in.) rather than fewer; tragus usually >13.0 mm (0.52 in.) rather than less.

At day roosts this species may be suspected when guano is found in circular patches in open areas. *Macrotus californicus* may be suspected if the guano is found at the edges of open areas (i.e. near the base of the sides or walls of a mine or other roost).

ILLUSTRATIONS: Color photo (Barbour and Davis 1969: plate XVIII)
Black and white photo (Barbour and Davis 1969:164, 176)
Color photo (Whitaker 1980: plate 145)
Color photo of species (Harvey, Altenbach, and Best, 1999: p. 55)
Color photo of species (Wilson 1999)

TOTAL RANGE: Central highlands of northern Mexico and southern California to the Edwards Plateau of Texas, with isolated populations in the Black Hills of South Dakota and the Gypsum Hills of south-central Kansas, western Oklahoma and northwestern Texas.

RANGE WITHIN ARIZONA: Widespread in Arizona. They have been found in Cochise, Coconino, Gila, Graham, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, and Yuma counties (AGFD, unpublished records accessed 2003).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: These bats prefer to hang from open ceilings at roost sites and do not use cracks or crevices. At maternity roosts these bats apparently prefer dim light near the edge of the lighted zone. In Arizona, emergence times and especially return times and patterns probably vary as they do elsewhere depending on insect activity and development stage of young.

Winter roosts generally contain fewer individuals (usually singles or small groups and in Arizona occasionally as many as 50) than summer roosts. For hibernation they prefer roost

sites where the temperature is 12° C (54° F) or less. These may be near entrances and in well-ventilated areas of the roost. The bats may arouse and move to other spots in the roost during the winter so as to be in areas of more stable cold temperatures. The ears are erectile and can be collapsed and rolled up while at rest and expanded to usual size when alert.

REPRODUCTION: Males and females congregate separately in summer. Although the males are thought to be mostly solitary, the females form maternity colonies of 12 to about 200 in the western U.S. and up to 1000 or more in the eastern U.S. In Arizona, 5 and possibly 2 additional maternity colonies have been found with numbers in one of about 100 and in another of several 100s. The most populous colony disappeared in the 1970s shortly after the roost site was gated to protect archeological and paleontological remains. After the gate was modified in the mid 1980s several bat species (but not *C. townsendii*) were observed flying inside the site. Current status of these sites is unknown.

In Arizona females are pregnant in April and maternity colonies have been reported in late April. Indirect evidence (near term embryos and presence of newborns) indicates the single young are born in June in Arizona. Dates of birth vary considerably throughout their range being reported from late April to mid July. In Arizona most young are flying by the end of July (they can fly at 2.5-3 weeks of age). Elsewhere young are weaned at about 6 to 8 weeks. Nursery colonies begin to disperse during August. Following mating in fall and winter (when it sometimes takes place while the female is torpid) sperm is stored in the female's reproductive tract until spring. Fertilization occurs when ovulation takes place.

Males in their first autumn produce few sperm and are thus thought to be essentially sterile and probably nonbreeding. Females in their first autumn, however, do breed and then bear young the following summer. Gestation varies from 56 to 100 days after fertilization depending on climatic conditions and the resultant metabolic rates of the females (i.e. development is slowed when the female goes into daily torpor). Band recoveries in California suggest a maximum longevity of 16+ years.

FOOD HABITS: Small moths, 3-10 mm (average 6 mm), are the primary food of these bats. Neuropterans, coleopterans, dipterans and hymenopterans are also sometimes taken. They are reported to take prey from leaves and while in flight along forested edges. Following a late night peak of activity they usually go to a night roost. They may forage again in the early morning since they are reported not to return to their daytime roosts until shortly before sunrise. They may forage several miles (4-5 miles) from the roost site. They cull the wings of moths and other insects before consuming their abdomen.

HABITAT: In Arizona, summer day roosts are found in caves and mines from desertscrub up to woodlands and coniferous forests. Night roosts may often be in abandoned buildings. In winter, they hibernate in cold caves, lava tubes and mines mostly in uplands and mountains from the vicinity of the Grand Canyon to the southeastern part of the state.

ELEVATION: *Corynorhinus townsendii* has been found from 550 to 7,520 feet (168 - 2294 m). Most records, however, seem to come from above 3,000 feet (915 m). According

to AGFD HDMS unpublished records (accessed 2003) *Corynorhinus townsendii pallescens* has been found from 550-8,437 ft (168-5272 m).

PLANT COMMUNITY: Desertscrub, oak woodland, oak/pine, pinyon/juniper, and coniferous forests.

POPULATION TRENDS: Thought to be declining due to loss of historic habitat in caves and mines.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1994]

STATE STATUS: None

OTHER STATUS: Group 4, species level (NNDFW, NESL 2005)
[Group 4, species level (NNDFW, NESL 2000)]

MANAGEMENT FACTORS: The greatest threats are human disturbance and vandalism at maternity and hibernating sites, and loss of roosting (mine closures) and foraging habitats (deforestation).

PROTECTIVE MEASURES TAKEN: *Corynorhinus townsendii pallescens* is listed as a vulnerable species in the Sonoran Desert Conservation Plan-draft.

SUGGESTED PROJECTS: Surveys needed to locate, census and monitor maternity colonies. More information is needed on summer and winter roost sits and foraging areas.

LAND MANAGEMENT/OWNERSHIP: BIA - Fort Apache, Hualapai, and San Carlos Reservations, and Tohono O'odham Nation; BLM - Arizona Strip, Havasu, Kingman, and Tucson Field Offices; DOD - Fort Huachuca Military Reservation; FWS - Havasu National Wildlife Refuge and Kofa National Wildlife Refuge; NPS - Grand Canyon and Saguaro National Parks, and Chiricahua, Montezuma Castle, and Organ Pipe Cactus National Monuments; USFS - Coconino, Coronado, Kaibab, Prescott and Tonto National Forests; State Land Department; Hualapai Mountain County Park; AMNH Southwestern Research Station; Colossal Cave; Tucson Mountain Park; Private.

SOURCES OF FURTHER INFORMATION

REFERENCES:

Armstrong, D.M. 1972. Distribution of Mammals in Colorado. Monograph of the Museum of Natural History, The University of Kansas, No. 3. Pp:73.

Barbour, R.W. and W.H. Davis. 1969. Bats of America. University Press of Kentucky. Lexington. pp. 164-178.

Cockrum, E.L. 1973. Additional longevity records for American bats. Journal of the Arizona Academy of Science 8:108-110.

Frost, D.R. and R.M. Timm. 1992. Phylogeny of plecotine bats (Chiroptera: "Vespertilionidae"): Summary of the evidence and proposal of a logically consistent taxonomy. American Museum Novitates 3034:1-16.

Hall, E.R. 1981. The mammals of North America. Second Edition. Vol I. John Wiley & Sons, Inc. New York. pp. 234-236.

Harvey, M.J., J.S. Altenbach, and T.L. Best. 1999. Bats of the United States. Arkansas Game and Fish Commision in Cooperation with the Asheville Field Office, U.S. Fish and Wildlife Service. P. 55.

Herder, M. Year unknown. *Corynorhinus townsendii*. Species account.

Hoffmeister, D.F. 1986. Mammals of Arizona. University of Arizona Press, Tucson, and Arizona Game and Fish Department, Phoenix. pp. 107-111.

Howe, H.F. and J.A. Lackey. 1975. Notes on a collection of bats from Huachuca Mountains, Arizona. S.W. Nat. 20(1):145-147.

Http://www.co.pima.az.us/cmo/sdcp/sdcp2/fsheets/vuln/ptbeb.html.

Humphrey, S.R. and T.H. Kunz. 1976. Ecology of a Pleistocene relict, the western big-eared bat (*Plecotus townsendii*), in the southern Great Plains. J. Mammal. 57:470-494.

Kunz, T.H. and R.A. Martin. 1982. *Plecotus townsendii*. Mammalian Species. No. 175:1-6. American Society of Mammalogists.

NatureServe Explorer: An online encyclopedia of life [web application]. 2001. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: http://www.natureserve.org/explorer. (Accessed: April 2, 2003).

Navajo Nation, Department of Fish and Wildlife. 2000. Endangered Species List for The Navajo Nation. The Navajo Nation, Window Rock, Arizona. p. 3.

Navajo Nation Department of Fish and Wildlife. 2005. Endangered Species List for the Navajo Nation. The Navajo Nation, Window Rock, Arizona. p. 3.

Sonoran Desert Conservation Plan-draft. 2001. *Corynorhinus townsendii pallescens*. Available: http://www.co.pima.az.us/cmo/sdcp/sdcp2/pvs.toc1.htm.

USDI, Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 59(219):58988.

USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 61(40):7596.

USGS. Available: http://www.npwrc.usgs.gov/resource/distr/others/nddanger/species/plectown.htm

Whitaker, J.O., Jr. 1980. The Audubon Society field guide to North American mammals. Alfred A. Knopf. New York. Plate 145.

Wilson D.E. et al. 1999. The Smithsonian Book of North American Mammals. Smithsonian Institution Press, Washington, in association with the American Society of Mammalogists, pp 121-123.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

J.R. Bain - Flagstaff.
V. Dalton - University of Arizona, Tucson.
D.F. Hoffmeister - University of Illinois, Urbana.
G.A. Ruffner - Phoenix.

ADDITIONAL INFORMATION:

These bats are versatile in their flight. They may dart swiftly from place to place or they may flow slowly and deliberately or they may hover. Their maneuverability can make it difficult to capture them with hand or mist nets or even to corner them in an enclosed mine tunnel or building.

Revised: 1991-08-17 (RBS)
1992-05-03 (BKP)
1992-10-06 (RBS)
1994-03-25 (DCN)
1998-01-26 (SMS)
2003-04-13 (AMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX **(= year of last revision as indicated at end of abstract)**. X…X **(=taxon of animal or plant)**. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.